13.0 PRINCIPLES OF TECHNOLOGY II

Prerequisite: Principles of Technology I
Principles of Technology II is a continuation of the first level. It provides instruction and experimentation with force, transformers, momentum, waves and vibrations, energy converters, transducers, radiation theory, optical systems and time constants. Students continue their hands-on activities with increasingly complex phenomena.

14.0 Exploring Communications

15.0 Exploring Construction

16.0 Exploring Manufacturing

17.0 Exploring PET

18.0 Intro to Cabinetry

19.0 Advanced Cabinetry

20.0 Introduction to Robotics

21.0 Robotics Applications

22.0 Mechanical Design Applications

23.0 Computer Aided Manufacturing (CAM) Technology

24.0 Introduction to Laser Technology

25.0 Electronics Applications

26.0 Aerospace/Flight Technology

27.0 Digital Imaging Technology

28.0 Video Editing Technology

29.0 Introduction to Drafting/Design Technology

30.0 Introduction to Mechanical Drafting/Design

31.0 Introduction to Architectural Drafting/Design

32.0 Introduction to Electronics Drafting/Design

33.0 Introduction to Structural Drafting/Design
34.0 Technical Illustration Technology

35.0 Graphic Design Technology

36.0 Introduction to Computer Aided Drafting/Design

37.0 Applied Physics

38.0 Applied Physics II

39.0 Emerging Technology Studies

40.0 Biotechnology Studies

41.0 Introduction to Information and Communication Technologies

42.0 Information and Communication Technologies" Networking Applications

43.0 Information and Communication Technologies" Telecom Applications

44.0 Information and Communication Technologies" Video/Graphic Applications

45.0 Occupational and Career Experience

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology II

IDAHO CODE NUMBER: TE 1972

13.01 Demonstrate principles and applications of momentum in mechanical, fluid, electrical and thermal systems.

13.02 Demonstrate solutions to waves and vibration problems and principles related to mechanical, electrical and fluid devices.

13.03 Demonstrate the use of energy converters related to electrical, mechanical, and fluid power systems.

13.04 Demonstrate the use of transducers related to mechanical, thermal, fluid and air systems.

13.05 Demonstrate the concept of radiation related to mechanical, thermal, fluid, air and

electrical systems.

13.06 Demonstrate principles of optical systems related to mechanical, thermal, fluid, air and electrical systems.

13.07 Demonstrate solutions to time constants as applied to mechanical, fluid, and electrical systems

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Principles of Technology II

IDAHO CODE NUMBER: TE 1972

13.01 DEMONSTRATE PRINCIPLES AND APPLICATIONS OF MOMENTUM IN MECHANICAL, FLUID, ELECTRICAL AND THERMAL SYSTEMS--
The student will be able to:

1. Demonstrate linear momentum and list its variables.
2. Demonstrate angular momentum and list its variables.
3. Demonstrate impulse and list its variables.
4. State the law of conservation of momentum as it affects linear or angular motion.
5. Apply the relationship of impulse to change in momentum.
6. List examples of how momentum affects mechanical and fluid systems.

13.02 DEMONSTRATE SOLUTIONS TO WAVES AND VIBRATION PROBLEMS AND PRINCIPLES RELATED TO MECHANICAL, ELECTRICAL AND FLUID DEVICES-
The student will be able to:

1. Demonstrate wave motion in general.
2. Demonstrate how waves transmit (move) energy.
3. List the characteristics that are used to describe a wave.
4. Distinguish between longitudinal and transverse waves.
5. Identify workplace applications where waves and vibrations are found.

13.03 DEMONSTRATE THE USE OF ENERGY CONVERTER RELATED TO ELECTRICAL, MECHANICAL, AND FLUID POWER SYSTEMS--
The student will be able to:

1. Demonstrate the purpose of an energy converter.
2. Identify converters that change mechanical energy to fluid or electrical energy.
3. Identify converters that change fluid energy to mechanical or thermal energy.
4. Identify converters that change electrical energy to mechanical or thermal energy.
5. Identify converters that change thermal to mechanical, fluid or electrical energy.
6. Apply by demonstration what is meant by the efficiency of an energy converter.

13.04 DEMONSTRATE THE USE OF TRANSDUCERS RELATED TO MECHANICAL, THERMAL, FLUID AND AIR SYSTEMS--
The student will be able to:

1. Define a transducer as a device that senses mechanical, fluid, electrical or thermal information.
2. Apply the action of a transducer.
3. Distinguish between an energy converter and a transducer.
4. Identify transducers that change mechanical signals into electrical signals.
5. Identify transducers that change fluid signals into mechanical or thermal information.
6. Identify transducers that change electrical signals into mechanical or thermal information.
7. Identify transducers that change thermal signals into mechanical, fluid or electrical information.

13.05 DEMONSTRATE THE CONCEPT OF RADIATION RELATED TO MECHANICAL, ELECTRICAL, FLUID, AIR AND THERMAL SYSTEM--
The student will be able to:

1. Define what is meant by "radiation."
2. Define what is meant by "electromagnetic" radiation.
3. Define what is meant by "nuclear" radiation.
4. Identify workplace applications where technicians measure or control radiation.

13.06 DEMONSTRATE PRINCIPLES OF OPTICAL SYSTEMS RELATED TO MECHANICAL, THERMAL, FLUID, AIR AND ELECTRICAL SYSTEMS--
The student will be able to:

1. Demonstrate how light can be represented by light rays.
2. Demonstrate how light can be represented by waves.
3. Identify the special characteristics of laser light.
4. List several optical systems that "process" light.
5. Identify workplace applications where technicians measure and control light.

13.07 DEMONSTRATE SOLUTION TO TIME CONSTANTS AS APPLIED TO MECHANICAL, FLUID, AND ELECTRICAL SYSTEMS--

The student will be able to:

1. List the distinguishing factors of uniform and non-uniform change.
2. Define a "time constant."
3. Identify systems where time constants are needed to describe system behavior.
4. Define three time constants.
5. Give examples of time constants in mechanical, fluid, electrical and thermal energy systems.
6. Identify workplace applications where technicians measure and control time constants.